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EXAMINER	
PEREZ, ANGELICA	
ART UNIT	**PAPER NUMBER**
2618	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/879,722	ICHIKAWA, YASUFUMI	
	Examiner	Art Unit	
	Perez M. Angelica	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *25-38* is/are allowed.

6)☒ Claim(s) *1-24,39 and 40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 2/19/2007 have been fully considered but they are not persuasive. .

2. In the remarks the applicant argues in substance:

Argument (A), in page 2, lines 7-8, the applicant argues: " ...the examiner failed to address the limitations of claims 39 and 40..."

In response to argument (A), the Examiner would like to point where the examiner addressed claims 39-40 in page 12 of the Office Action dated 11/21/2006.

Argument (B), in pages 2 and 3, lines 13-30 and 1-2, respectively, the applicant argues: "controlling an adjustable digital-to-analog converter for generating an analog baseband signal to be ...there is not such teaching."

In response to argument (B), the Examiner would like to point where there was no language in the specifications describing an "adjustable digital-to-analog converter", the specifications refer to controlling a digital-to analog converter as a prior stage of a variable power amplifier.

As such, the examiner has already addressed the control of a digital to analog converter.

In addition, provided the applicant can show support for an adjustable digital-to analog converter, the examiner would like to show where in pages 5 and 6, lines 20-31 and 1-11, the Malkemes reference teaches of a hybrid digital to analog circuit adapted to receive variable inputs, thus, adjustable.

Argument (C), in page 3, lines 3-20, the applicant argues where "Nguyen...does not generate an analog baseband signal as specified by claims 1 and 13...", "...the DAC of Nguyen is clearly not adjustable..."

In response to argument (C), the Examiner would like to point out where a baseband signal is simply an analog signal of low frequency. However for the sake of argument, Melkemes teaches where the intermediate signals, which are baseband signals are generated (See page 11 lines 9-15). In addition, the adjustability issue has been addressed in point B above.

Argument (D), in page 3, lines 21-29, the applicant argues where "...an amplifier unit comprising a plurality of variable power amplifiers...Malkemes clearly shows only a *single* variable amplifier..." .

In response to argument (D), the Examiner would like to point out where Igarashi et al. teaches for the variable power amplifiers. See figure 1, items 2-3. In addition, if the applicant means a set of sets of variable power amplifiers, the examiner did not find neither in the specifications, nor in the drawings any support that would make such interpretation could be feasible.

Argument (E), in page 4, lines 10-20, the applicant argues where "...Igarashi does not teach a plurality of power amplifiers...that are individually controlled..." and where "...transmission *without further modulation*"

In response to argument (E), the Examiner would like to say that given a broad reasonable interpretation to the claims, where it does not specifically indicates that *different control units* controlling each amplifier, thus, Igarashi does teach where the

variable power amplifiers are individually controlled (not all the amplifiers are controlled at once, the first amplifier is controlled and then the subsequent amplifiers are controlled as they receive the previous amplifier signal). Regarding the without further modulation issue, please see the rejection dated 11/21/2006.

Argument (F), in pages 4 and 5, lines 28-31 and 1-9, respectively, the applicant argues where "Malkemes...fails to teach any plurality of power amplifiers...Igarashi does not overcome the Malkemes shortcomings..."

In response to argument (F), the Examiner would like to say where at least Igarashi teaches of the ratio in series and where Igarashi comprises a plurality of power amplifiers as stated in point D.

Argument (G), in pages 6 and 7, lines 8-31 and 1-2, respectively, the applicant argues where Fujita...no teaching of modifying any *ratio*..."

In response to argument (G, the Examiner would like to say where at least Igarashi teaches of the ratio in series and where Igarashi comprises a plurality of power amplifiers as stated in point D.

Argument (H), in pages 7 and 8, lines 10-13 and 1-6, the applicant argues where "...'control sensitivity'...Fujita teaches only a single variable...".

In response to argument (H), the Examiner would like to say where Fujita does teach a variable amplifier and also would like o point where the same argument as in point D applies here.

Argument (I), in page 9, lines 10-19, and the applicant argues where "the examiner has failed to provide the proper motivations for combining..."

In response to argument (I), the Examiner would like to answer by saying that al of the references deal with the controlling of power, an addition, most of them teach where the power control is done through the utilization of variable power amplifiers.

Allowable Subject Matter

3. Claims 25-38 are allowed.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-2, 13-14 and 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Malkemes (Malkemes et al.; WO 97/40584) in view of Igarashi (Igarashi et al.; 5,926,749 A) and further in view of (Nguyen et al.; 6,253,092 B1).

Regarding claims 1 and 13, Malkemes teaches of a transmission power control method, voltage controller and apparatus for controlling the power to transmit to the distant party (page 1, lines 11-15 and 22-24; column 1, lines 7-10 and figure 1), comprising the steps of: controlling a digital-to-analog converter for generating an analog baseband signal (page 4, lines 7-13; where control is exercised by having the stages in a fixed fashion; page 11, lines 9-10; e.g., " ... I and Q signals are applied to digital-to-analog converters..."), to be input to a modulator (page 11, lines 10-13; where

analog signals are inputted into the modulator in order to convert them into IF signals); modulating the baseband signal for frequency-converting the baseband signal to a modulated signal in an IF band (page 11, lines 10-13; e.g., "... modulated to an intermediate frequency); inputting the modulated signal into an amplifier of an power amplifiers (page 6, lines 28-29), Malkemes further teaches of controlling a power amplifier for amplifying the transmission signal modulated by the modulator (page 11, lines 17-18; e.g., "the radio frequency signal is then applied to the transmit power amplifier..."). Malkemes further teaches where the amplified signal receives no further modulation (figure 2, items 160 and 190i where the signal is transmitted, after it is amplified for a last time, without further modulation).

Malkemes does not specifically teach of individually controlling each of a plurality of variable power amplifiers for variably amplifying the modulated signal for transmission without further modulation.

In related art, concerning an amplifier circuit having common AGC to IF and RF amplifiers for use in a transmitter, Igarashi teaches of individually controlling each of a plurality of variable power amplifiers for variably amplifying the modulated signal for transmission without further modulation (column 1, lines 24-26; where the apparatus exerts power control utilizing several power amplifiers; figure 4, items 2,3, 4 are individually controlled by VAC and VA2; also see figure 1, item 8, where the signal is amplified for a last time without being modulated alter the amplification. There is no modulator shown after the amplifier, therefore, no modulation).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Malkemes's power control method and apparatus with Igarashi's variable power amplifiers in order to provide an amplifier circuit suitable for a transmitter, which is capable of realizing a large dynamic range in a simple configuration, as taught by Igarashi.

Malkemes and Igarashi do not specifically teach of an adjustable digital-to-analog converter. In related art, regarding a closed loop transmitter with DAC sensitivity adjusted to detector nonlinearity, Nguyen teaches of an adjustable digital-to-analog converter (columns 2, 3 and 4, lines 10-12, 51-63 and 43-50, respectively). It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Malkemes and Igarashi's power control method and apparatus with Nguyen's adjustable digital-to-analog converter in order to "maximize the resolution of the reference input signal over a wide range power levels", as taught by Nguyen.

Regarding claims 2 and 14, Malkemes, Igarashi and Nguyen teaches all the limitations of claims 1 and 13, respectively. Malkemes further teaches where a control ratio of the variable power amplifiers is modified and at least one of series and parallel control in a control range is made in the controlling a plurality of variable power amplifiers (figure 1, items 2, 3, 4, 6, 8; where the examiner has selected an arrangement in series from the choices given by the applicant).

6. Claims 3, 5-6, 15 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Malkemes in view of Igarashi, further in view of Nguyen as applied to Claims 1 and 13 above, and further in view of Fujita.

Regarding claims 3 and 15, Malkemes, Igarashi and Nguyen teach all the limitations of claims 2 and 14, respectively. Malkemes further teaches of circuit conditions between a portable telephone and a base station being applied to the transmit output correction circuit (column 1, lines 58-67).

Malkemes, Igarashi and Nguyen do not specifically teach of a detection step of detecting a state of at least one of a local station and a distant station; and a modification step of modifying the control ratio according to the detected state.

Fujita teaches of a detection step of detecting a state of at least one of a local station and a distant station; and a modification step of modifying the control ratio according to the detected state (column 7, lines 28-30 and column 13, lines 19- 47; where the detected states relate to position).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Malkemes, Igarashi and Nguyen's power control method and apparatus with Fujita's detecting a state and ratio control modification in order to provide a transmitter for mobile communication that can provide a high efficiency for a wide output dynamic range, as taught by Fujita.

Regarding claims 5 and 17, Malkemes, Igarashi and Nguyen teach all the limitations of claims 3 and 15, respectively.

Malkemes, Igarashi and Nguyen do not teach where the control ratio according to the state of at least one of the local station and the distant station is adaptively modified in the modification step.

Fujita further teaches where the control ratio according to the state of at least one of the local station and the distant station is adaptively modified in the modification step (columns 7, lines 28-30; changes are made as conditions change).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Malkemes, Igarashi and Nguyen's power control method and apparatus with Fujita's detected states of at least a local station and a distant station in order to provide a transmitter for mobile communication that can provide a high efficiency for a wide output dynamic range, as taught by Fujita.

Regarding claims 6 and 18, Malkemes, Igarashi and Nguyen teach all the limitations of claims 1 and 13, respectively.

Malkemes, Igarashi and Nguyen do not specifically teach where a control sensitivity of each of the plurality of variable power amplifiers differs from each other.

Fujita further teaches where a control sensitivity of ea~h'0fthe plurality of variable power amplifiers differs from each other (figure 1, items 2, 3 and 4; where it is inherent of variable power amplifiers to differ regarding control sensitivity due to physical conditions such as position, interference, etc. See US Patent No.: 6,411,825, column 9, lines 34-39).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Malkemes, Igarashi and Nguyen's power control method and apparatus with Fujita's sensitivity control of the amplifiers in order to being able to perform better power adjustments.

7. Claims 4 andl6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Malkemes in view of Igarashi and Fujita, further in view of Nguyen and further in view of Davidovici (Davidovici et al.; US Patent No.: 5,963,583).

Regarding claims 4 and 16, Malkemes, Igarashi, Fujita and Nguyen teach all the limitations of claims 3 and 15, respectively.

Malkemes Igarashi, Fujita and Nguyen do not teach where a plurality of the states of at lest one of the local station and the destination station are detected in the detection step, where the control ratio is modified by using fuzzy control rules and fuzzy inference that are based on the plurality of states in the modification step.

In related art, concerning fussy-logic adaptive power control, Davidovici teaches of a plurality of the states of at lest one of the local station and the destination station are detected in the detection step, where the control ratio is modified by' using fuzzy control rules and fuzzy inference that are based on the plurality of states in the modification step (columns 3 and 4, lines 8-20, 34-39 and 53-60; where the interference is indicated by the SIN ratio and the states are based on position).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Malkemes, Igarashi, Fujita and Nguyen variable power control method with Davidovici's Fuzzy-logic controller as an alternative method to manage the constantly changing detection states and to indicate the amount by which to increase or decrease transmitted power, as taught by Davidovici.

8. Claims 7 and 19 are rejected under 35 U.S.C. as being unpatentable over Malkemes and Fujita and further in view of, Shibahara (Shibahara, Masashi; JP Patent No. JP357166711A).

Regarding claims 7 and 19, Malkemes teaches of a transmission power control method and apparatus for controlling the power to transmit to a distant party (page 1, lines 11-15 and 22-24; where the control of power in a long distance communication system is effectuated; column 1, lines 7-10 and figure 1). Malkemes further teaches of a power amplifier for amplifying a transmission signal (figure 2, item 160).

Malkemes does not specifically teach of a voltage controller for controlling the power amplifier via separate bias systems; and a control unit for controlling the plurality of voltage controllers.

Fujita teaches of a voltage controllers for controlling the power amplifier via separate bias systems (figure 4, items 7a and 26 represent voltage controllers; where the examiner has considered the "amplifier" as a general term in the invention referring to the "variable amplifier" if this is not the case, then, the applicant has two different inventions. E.g., claims 1-6, 13-18 and 25-28 referring to a variable power amplifier; and claims 7-12, 19-24, 32-38 referring to a single amplifier; amplifier. Figure 4, items 24 and 25 represent the separate bias systems); and a control unit for controlling the' plurality of voltage controllers (figure 4, item 9').

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Malkemes's power Control method with Fujita's voltage

controller in order to set the output power level of the output terminal of the circuit to a desired level, as taught by Fujita.

Malkemes and Fujita do not specifically teach of a plurality of voltage controllers. In related art, concerning a power amplifier for a musical instrument, Shibahara teaches of a plurality of voltage controllers (paragraph 2).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Malkemes and Fujita's power control method with Shibahara's plurality of voltage controllers in order to in order to "output the maximum electric power against load variation", as taught by Shibahara. Regarding claims 8 and 20, Malkemes, Fujita and Shibahara teach all the limitations of claims 7 and 19, respectively. Alkenes further teaches where a control ratio of the variable power amplifiers is modified and at least one of series and parallel control in a control range is made in the controlling a plurality of variable power amplifiers (figure 1, items 2, 3, 4, 6, 8; where the examiner has selected an arrangement in series from the choices given by the applicant).

Regarding claims 9 and 21, Malkemes, Fujita and Shibahara teach all the limitations of claims 8 and 20, respectively. Malkemes further teaches of circuit conditions between a portable telephone and a base station being applied to the transmit output correction circuit (column 1, lines 58-67).

Regarding claims 11 and 23, Malkemes, Fujita and Shibahara teach all the limitations of claims 9 and 21, respectively.

Malkemes, Fujita and Shibahara do not teach where the control ratio according to the state of at least one of the local station and the distant station is adaptively modified in the modification step.

Fujita further teaches where the control ratio according to the state of at least one of the local station and the distant station is adaptively modified in the modification step (columns 7, lines 28-30; changes are made as conditions change).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Malkemes, Fujita and Shibahara's power control method and apparatus with Fujita's detected states of at least a local station and a distant station in order to provide a transmitter for mobile communication that can provide a high efficiency for a wide output dynamic range, as taught by Fujita.

Regarding claims 6, 12, 18 and 24; Malkemes, Fujita and Shibahara teach all the limitations of claims 7 and 19, respectively.

Malkemes, Fujita and Shibahara do not specifically teach where a control sensitivity of each &the plurality of variable power amplifiers differs from each other. Fujita further teaches where a control sensitivity of each of the plurality of variable power amplifiers differs from each other (figure 1, items 2, 3 and 4; where it is inherent of variable power amplifiers to differ regarding control sensitivity due to physical conditions such as position, interference, etc. See US Patent No.: 6,411,825; column 9, lines 34-39).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Malkemes, Fujita and Shibahara's power control

method and apparatus with Fujita's sensitivity control of the amplifiers in order to being able to perform better power adjustments.

9. Claims 10 and 22, are rejected under 35 U.S.C. 103(a) as being unpatentable over Malkemes in view of and Fujita, further in view of Shibahara and further in view of Davidovici (Davidovici et al.; US Patent No.: 5,963,583).

Regarding claims 10 and 22, Malkemes, Fujita and Shibahara teach all the limitations of claims 9 and 21, respectively.

Malkemes, Fujita and Shibahara do not teach where a plurality of the states of at lest one of the local station and the destination station are detected in the detection step where the control ratio is modified by using fuzzy control rules and fuzzy inference that are based on the plurality of states in the modification step. In related art, concerning fussy-logic adaptive power control, Davidovici teaches of a plurality of the states of at lest one of the local station and the destination station are detected in the detection step, where the control ratio is modified by using fuzzy control rules and fuzzy inference that are based on the plurality of states" in the modification step (columns 3 and 4, lines 18-20, 34-39 and 53-60; where the interference is indicated by the SIN ratio and the states are based on position).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Malkemes, Fujita and Shibahara variable power control method with Davidovici's Fuzzy-logic controller as an alternative method to manage the constantly changing detection states and to indicate the amount by which to increase or decrease transmitted power, as taught by Davidovici.

Regarding claims 39 and 40, Malkemes, Igarashi and Nguyen teach all the limitations of claims 1 and 13, respectively.

Igarashi further teaches where the plurality of variable power amplifiers are individually controlled such that a function of an output of the amplifier unit to a control voltage is substantially linear over a wider range of the control voltage than is a function of each one of the plurality of variable power amplifiers to the control voltage (columns 1 and 2, lines 62-67, 55-60).

It would have been obvious to one of ordinary skill in the art, at the time the~ invention was made to combine Malkemes, Igarashi and. Nguyen's teachings with Igarashi's further teachings in order to accomplish a large dynamic range o voltages in a simple structure, as taught by Igarashi.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

1. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Angelica Perez whose telephone number is 571-272-7885. The examiner can-normally be reached on 6:00 a.m. - 2:30 p.m., Monday - Friday. If attempts to reach the examiner by telephone is unsuccessful, the examiner's supervisor, Matthew D. Anderson can be reached on (571) 272-4177. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-83(J0 four regular communications and for After Final communications. Information regarding the status of an application may be obtained from the Patent Application.

Information Retrieval (PAIR) system. Status information for published applications may be obtained from either the PAIR or Public PAIR. Status information for unpublished applications is available through the Private PAIR only.

For more information about the pair system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). Information regarding Patent Application Information Retrieval (PAIR) system can be found at 866-217- 9197 (toll-flee).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2600's customer service number is 703-306-0377.

Angelica Perez
Examiner

MATTHEW ANDERSON
SUPERVISORY PATENT EXAMINER

Art Unit 2618

April 30, 2007